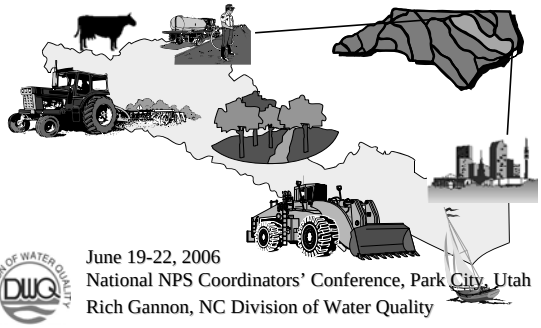
Tar-Pamlico Nutrient Strategy: A Large-Scale Watershed Restoration



June 19-22, 2006
National NPS Coordinators' Conference, Park City, Utah
Rich Gannon, NC Division of Water Quality

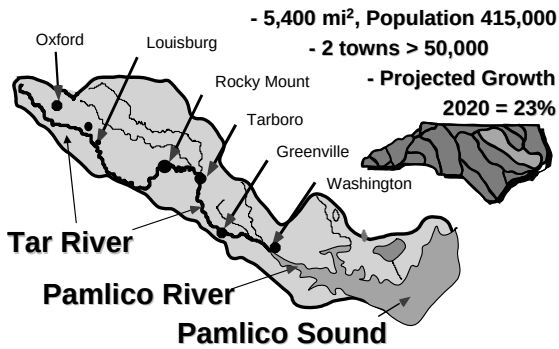
Talk Outline

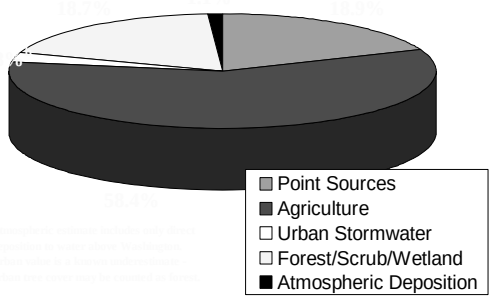
- Basin and strategy overview
- Accounting
- Progress
- Hindsight

Insights for Mandatory Restoration Strategies

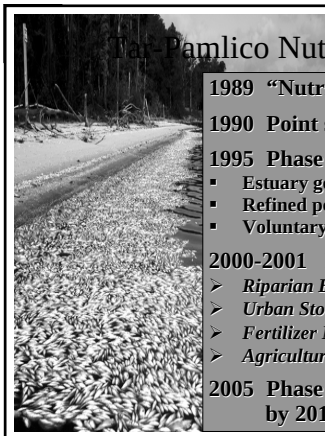
- Adequate planning time. For:
- Buy-in on problem & contributors is key
- Create options with affected parties
- Inclusive, fair, open *process*
- Inclusive, equitable & workable *outcomes*
  - Performance goals
  - Maximize options
- Reality check: dual accounting

TAR-PAMLICO RIVER BASIN





Tar-Pamlico Nutrient Strategy



1989 "Nutrient Sensitive Waters"

1990 Point source cap, 'trading'

1995 Phase II:
- **Estuary goals: 30% N ↓, no P ↑**
- **Refined point source caps, trading**
- **Voluntary NPS plan**

2000-2001 NPS rules:
- ***Riparian Buffer Protection***
- ***Urban Stormwater***
- ***Fertilizer Management***
- ***Agriculture***

2005 Phase III: restore estuary by 2013

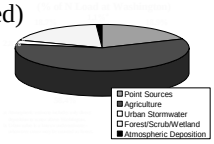
Tar-Pamlico Nutrient Strategy

Noteworthy Features

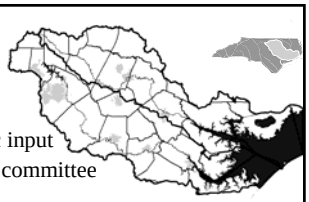
- Dischargers & enviro's originated
- Estuary N, P loading goals & allocations
- Point source caps, offset to ag BMPs
- Innovative cropland regulation
- Clean-up deadline

Buy-In on Problem?

- Late '80's – yes (highly visible)
  - ➢Agreement reflected strong collaboration
- Late '90's – no (crisis passed)
  - ➢Rules harder to adopt



Planning Stages



- Template (Neuse):
  - 2+ yrs, 2 rounds public input
  - Legislated stakeholder committee
- Tar rulemaking process – 3 yrs:
  - Draft rules - 8 stakeholder teams
  - Hearing Officer-stakeholder deliberations 1 yr.
  - Legislative arbitration process 6 mo.
- Implementation – 1st 2 yrs developed model & accounting

Nonpoint Source Rules

Tar-Pamlico Nutrient Strategy

❶ Agriculture

- 30% ⇩ N loss in 5 years or else EMC
- No ⇧ P
- Local control, local responsibility
- Option: standard BMPs or collective fate
- 'Land-based' accounting - annual reports

❷ Fertilizer Management

- Applicators - training or plans in 5 years
- Homeowners - DWQ education program

Nonpoint Source Rules

Tar-Pamlico Nutrient Strategy

❸ Riparian Buffer Protection

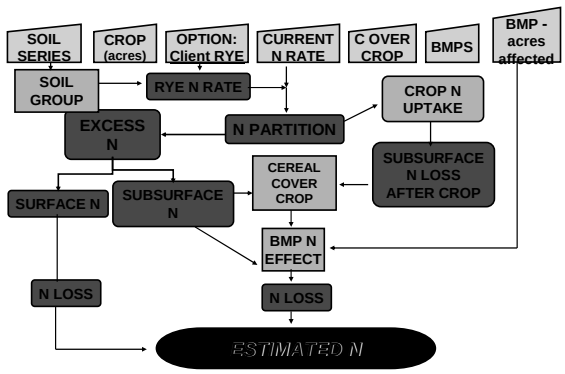
- All land uses
- Existing 50-ft veg'd buffers
- Pre-existing uses continue
- Change in use?
  Must establish buffer

❹ Urban Stormwater

11 key local governments

- New development meets export targets
- Illicit discharge detection/removal
- Education programs & seek retrofits

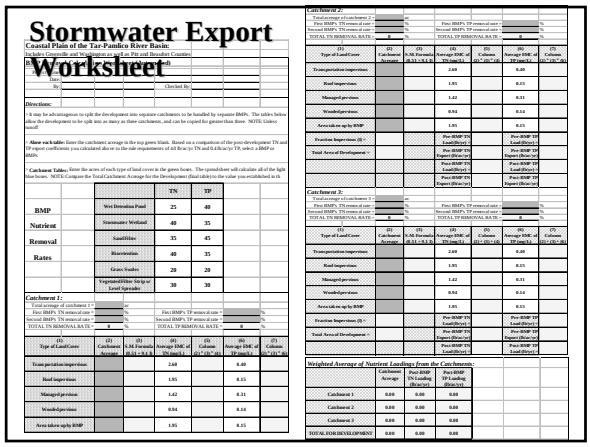
Agricultural Nitrogen Loss Accounting Tool



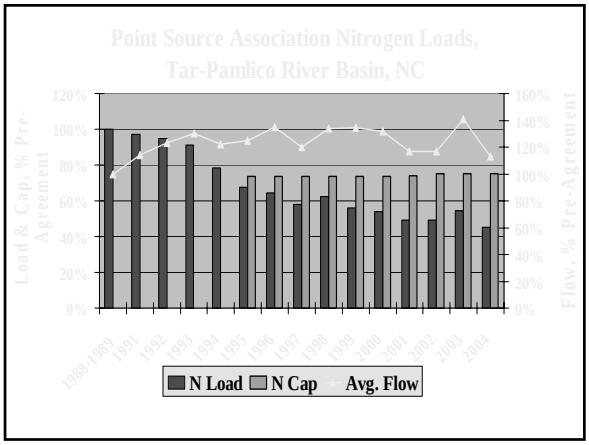
Agricultural N Loss Reductions from 1991

	2003	2004
N Rate Decreases	23.0	22.5
Crop Shifts	11.6	11.8
BMPs	5.1	6.5
Crop Acreage Reduction	7.1	6.3
Total N Loss Reduction	47%	47%

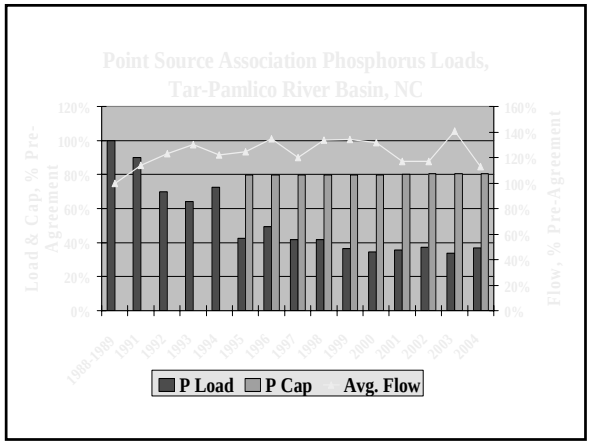
Stormwater Export Worksheet

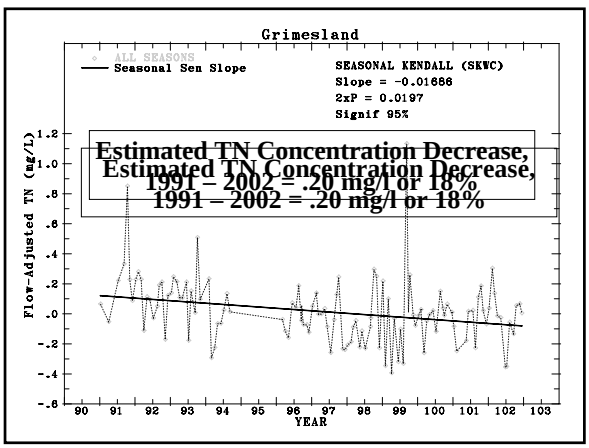


Point Source Association Nitrogen Loads, Tar-Pamlico River Basin, NC



Point Source Association Phosphorus Loads, Tar-Pamlico River Basin, NC





Estimated TN Concentration Decrease, 1991 – 2002 = .20 mg/l or 18%

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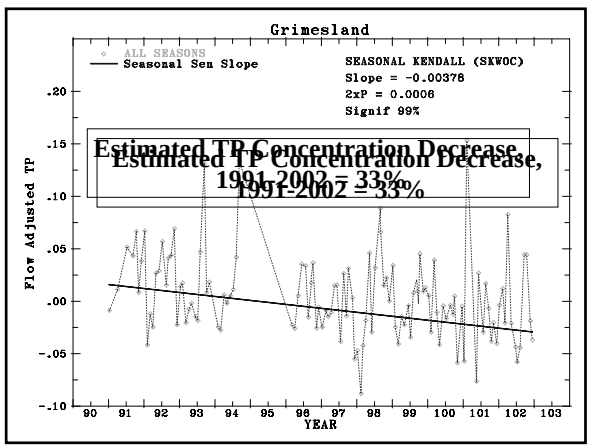

Estimated TP Concentration Decrease, 1991-2002 = 33%

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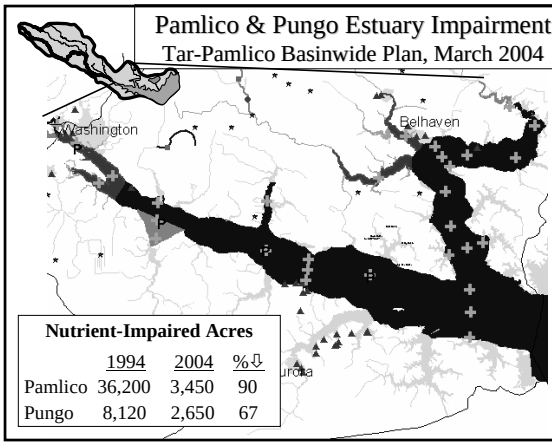
Pamlico & Pungo Estuary Impairment
Tar-Pamlico Basinwide Plan, March 2004



Nutrient-Impaired Acres

	1994	2004	%⇩
Pamlico	36,200	3,450	90
Pungo	8,120	2,650	67

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More Information

Tar-Pamlico Nutrient Strategy
http://h2o.enr.state.nc.us/nps/tarpam.htm

Neuse Nutrient Strategy
http://h2o.enr.state.nc.us/nps/Neuse_NSW_Rules.htm

***Draft* Jordan Lake Nutrient Strategy**
Report to October 2005 Water Quality Committee:
http://h2o.enr.state.nc.us/admin/

Stakeholder Process, More Documents:
http://www.tjcog.dst.nc.us/jorlak/jlsp.htm

DWQ staff contact: Rich Gannon
919-733-5083 ext. 356, rich.gannon@ncmail.net

N Cost-Effectiveness Comparison

Practice	$/lb Reduced (30-Yr. Life Equiv.)
Agriculture	
• Water Control Structure	$1.20
• Nutrient Management	$7 - $9
• Vegetated Filter Strip	$7 - $8
• Conservation Tillage	$20 - $80
Riparian Wetland Restoration	$11 - $20
Stormwater Wet Det. / Bioret.	$57 - $86